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# **DIGITAL WORKPLACE TRANSFORMATION – ON THE ROLE OF SELF-DETERMINATION IN THE CONTEXT OF TRANSFORMING WORK ENVIRONMENTS**

*Research Paper*

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## **Abstract**

*Digital transformation is currently one of the most prominent topics in information systems research. In this context, existing work mainly focuses on the digitalization of business models and impacts on economy or society, representing a macro perspective on digital transformation. However, with the transformation of business models also come significant IT-induced changes of underlying processes and eventually workplace environments. In this paper, the term “digital workplace transformation” is introduced and corresponding success factors investigated, thereby adding a micro perspective to the ongoing research stream on digital transformation. Driven by facets of self-determination, it will be shown for an organization in the wholesale industry, that enabling employees to feel autonomous, competent and connected in the future workplace environment is not only vital for their expected performance but also expected well-being. Both in turn increase the users’ positive attitude towards digital workplace transformation and intentions to actively support necessary change processes.*

*Keywords: digital transformation, workplace transformation, future work, self-determination, adoption, diffusion, support*

# 1 Introduction

In recent years, we have witnessed a rapid and ongoing digital transformation taking place, tremendously changing our economy and society (Trantopoulos et al., 2017; vom Brocke et al., 2016). While there is no universally accepted definition of “digital transformation,” existing descriptions mostly differ on the extent to which transformation goes beyond simple IT integration, for instance: “the integration of digital technologies into business processes” (Liu et al., 2011, p. 1728), turning “partly digitized business and society models into fully digitized business and society models” (Riedl et al., 2017, p. 481), or “a fundamental reshaping of the organization’s behavior” (Moreton, 1995, p. 149). Studying corresponding literature, research has mainly focused at the macro level of digital transformation, i.e., on business models and products. Less attention has been paid to the micro level of digital transformation, or the individual’s workplace environment and the array of new digital tools, which may come with the digital transformation of the business model. Hence, in this work, the term “*digital workplace transformation*” is introduced and focused on. Central to the understanding of this term is the adoption of digital innovations that are “significantly new ways of doing things in an organizational setting that are embodied in or enabled by IT” (Fichman et al. 2013, p. 334). From an a customer’s perspective, IT can be described as ‘transformational’ when it leads to a “change in a personal process of more than half the steps (e.g., digital photography)”, “change in social relations affecting at least half of one’s contacts or doubling the number of contacts (e.g., Facebook)” or “a change in user experience involving at least 2 hours per day” (Lucas et al. 2013, p. 373). This concept is transferred to the workplace area, leading to the following definition: *Digital workplace transformation is a phenomenon of new technologies causing significant changes to a variety of work-related aspects: to how employees carry out tasks and processes, to their social relations within the organization and subsequently to their overall workplace experience.*

Looking ahead, a digitally transformed workplace can also empower employees to cope with future changes that come along with the increasingly knowledge-centric business models: the requirement of continuous personal adaptation to changing work practices and social structures (Leidner et al. 2017; Dawson et al. 2016), representing an ongoing process of intensive learning. In psychology, Self-determination Theory (Deci and Ryan, 1985) as a theory of human motivation has shown that in learning environments (e.g. schools or universities), those individuals perform the best, who perceived their basic psychological needs autonomy, competence and relatedness to be satisfied. These individuals also showed the highest levels of well-being (Deci et al., 2017). In this paper, it is therefore investigated, how the expected autonomy, competence and relatedness at a digitally transformed workplace influences the employee’s expected work performance and enjoyment, subsequently impacting positive attitudes towards digital workplace transformation. It will be argued that such positive attitude is a significant prerequisite for employees’ intention to play an active and supportive role in corresponding transition phases. Research has stated that this *active user involvement* in change processes plays a tremendous role for the success of corresponding implementation projects (Kaschig et al., 2016; Shatat, 2015). Yet, until now, no construct existed that captures employees’ intention for active engagement in complex situations of change. The paper fills this gap by establishing a corresponding variable.

In this study, a global enterprise of more than 150,000 employees in the wholesale industry is investigated, looking at one of its subsidiaries with 226 employees in more detail. The management plans to digitalize not only the business model but also the underlying processes and consequently the work places, leading to a situation in which an array of new digital tools will be implemented at the same time. In this context, aspects are analyzed that influence employees’ positive attitude towards digital transformation of their workplace and its role for the intention to actively support the project.

The contribution of this paper is threefold. First, with focusing on digital workplace transformation as a consequence of business model transformation, a *micro-perspective* will be introduced, which has been neglected so far. Second, by highlighting the important role of *self-determination* in describing employees’ work behavior with respect to performance and enjoyment, it will be pinpointed how to influence employees’ attitude regarding digital workplace transformation. Third, a *new construct to capture employees’ intentions to actively support changes* in their work environment will be added, which helps to better explain the success of digital transformation projects.

## **2 Background and Hypotheses Development**

### **2.1 Self-Determination in the Context of Digital Workplace Transformation**

Self-Determination Theory is a macro theory, which consists of various micro-theories on human motivation. Introduced by Deci and Ryan (1985), self-determination describes “a quality of human functioning that involves the experience of choice” (Deci and Ryan, 1985, p. 38). In order for an individual to be self-determined, he or she is driven by two types of motivation: intrinsic and extrinsic. Intrinsic motivation refers to activities for which the reward is inherent of the activity or task (Salehan et al., 2017). Accordingly, intrinsically triggered behavior is independent from supervision and unaffected by others. In contrast, extrinsic motivation refers to situations in which the reward is provided by the outside, i.e., motivation is caused by triggers external to the individual (Ke and Zhang, 2010). Self-Determination Theory is based on the assumption that all human beings, across all cultures and settings, have three fundamental and universal psychological needs: the need for autonomy, competence, and relatedness (Deci and Ryan, 1985). While the need for autonomy describes an individual’s “sense of choice in initiating and regulating one’s own actions” (Deci et al., 1989, p. 580), the need for competence captures an individual’s confidence in pursuing and effectively mastering activities in his or her purview (Deci and Ryan 1985). The need for relatedness captures an individual’s sense of connectedness with significant others that share the same values (Deci et al., 1991).

Self-Determination Theory, as one of the most prominent theories for motivation, has been applied and quantitatively tested across a variety of fields, including psychology, sociology, management science and others. In IS research, studies named Self-Determination Theory as an important theory to explain human motivation (e.g. Walsh, 2013; Walsh et al., 2010). However, only a few studies have explicitly used Self-Determination Theory as a theoretical fundament. Exceptions are, for instance, a qualitative study that showed intrinsic motivation, driven by the satisfaction of the needs autonomy, competence and relatedness, to be an important factor for increasing students’ participation in e-learning contexts (Shroff et al., 2007), or a study that used Self-Determination Theory to explain decisions for sharing information and rumors in online discussion forums (Marett and Joshi, 2009). Like in the prior study, intrinsic motivations were found to be a key determinant in explaining online user behaviors. Yet another study has shown that the degree to which the three basic psychological needs autonomy, competence and relatedness are fulfilled influences intrinsic and extrinsic motivations, which in turn, affect an individual’s efforts in projects related to open source software development (Ke and Zhang, 2010).

Individual needs have also been the object of IS studies. One study, for example, explored qualitatively how to increase the engagement of students in an MIS course, focusing particularly on the need for autonomy as an important driver for satisfaction and productivity (Lichtenstein et al., 2015). Another investigated the influence of autonomy and competence on intentions to use a new technology (Bakke et al., 2015). Yet another study examined qualitatively the relationship between CIOs and CEOs by looking, amongst others, at job autonomy as an important outcome of mutual trust and leading to increased levels of motivation and increased performance for the CIO (Arnitz et al., 2017). Since work has become increasingly complex and anonymous at the same time, especially in knowledge-centric industries (Kjaer and Madsen, 1995; Greenbaum and Kyng, 1991), more and more organizations digitize their processes and with it, entire workplaces (Yeow et al., 2018; Besson and Rowe, 2012). Employees’ acceptance and willingness to support the necessary changes is therefore crucial for digital transformation strategies to take a hold in organizations (Tavakoli et al., 2017; Barrett and Oborn, 2013). In such contexts, Self-Determination Theory provides an important lens that helps to understand and predict user behaviors.

In the following, the relevant hypotheses for this study are derived. First, it is hypothesized that fulfilling the needs for autonomy, competence and relatedness are positively related to performance and enjoyment when using and interacting with a digitally transformed workplace. Second, it is hypothesized that the performance and enjoyment impacts influence general attitudes towards the digitization of the workplace. More specifically, it will be asserted that an employee’s attitude influences his or her willingness to actively support the digitization process as well as his or her subsequent usage intentions.

## 2.2 The role of self-determination for performance and enjoyment in digital workplaces

Performance and enjoyment are two important variables in IS adoption literature. While performance captures the degree to which an individual perceives a system as being supportive of his own work effectiveness and efficiency (Venkatesh et al., 2003), enjoyment describes the degree to which an individual experiences positive emotions while using a system (van der Heijden, 2004). Since performance-related work behaviors and the well-being of employees also play a crucial role in the context of digital workplace environments, both definitions are re-casted with this new setting in mind. More specifically, in this paper performance is understood as the degree to which an employee perceives the digital work environment with all its systems as being supportive of his or her work effectiveness and efficiency, and enjoyment as the degree to which an employee experiences positive emotions when engaging with the digital work environment. Following, it is described how perceptions of performance and enjoyment are influenced by an individual's levels of autonomy, competence and relatedness.

### 2.2.1 Autonomy

Autonomy can be understood as a “sense of choice in initiating and regulating one's own actions” (Deci et al., 1989, p. 580). Studies have shown that autonomy increases work as well as learning performance of individuals (Jeno and Diseth, 2014; Arshadi, 2010). In fact, if management practices are void of providing autonomy or freedom in the workplace, it leads to low levels of organizational performance and creativity (Khedhaouria et al., 2014). Moreover, research also has shown a positive influence between autonomy and users' attempts to innovate with IT, in turn supporting new ways of work (Deng and Joshi, 2016). Hence, it is hypothesized:

*H1a: Expected autonomy positively influences the expected performance at the digital workplace.*

Autonomy also leads to increased levels of user satisfaction and enjoyment (Kim et al., 2016), which, in turn, can have a positive influence on individuals' engagement with virtual worlds (Ozkara et al., 2016, p. 855; Jung, 2011). The linkage between autonomy and enjoyment has also been shown in an experiment where researchers manipulated video game characteristics related to autonomy and showed its positive impact on enjoyment (Tamborini et al., 2010, p. 769). In order to fuel the desire to work, managers should always provide a set of options to safeguard intrinsic motivation, regardless of how minimal the leeway of free choice actually is (Meng and Ma, 2015, p. 446). Therefore, it is hypothesized:

*H1b: Expected autonomy positively influences expected enjoyment at the digital workplace.*

### 2.2.2 Competence

Competence “involves understanding how to attain various external and internal outcomes and being efficacious in performing the requisite actions” (Deci et al., 1991, p. 327). In instances where managers fail to communicate external cues like feedback, workers are not able to satisfy their need for competence (Hagger et al., 2014). Competence has been found to be positively related to an individual's personal accomplishments (Fernet et al., 2013; Van den Broeck et al., 2010, p. 996). Competence is positively related to task interest (Schiefele, 2009; Renninger and Hidi, 2002) and has been shown to have a strong correlation with the overall work-related performance, as shown in a meta-analysis of 114 studies by Stajkovic and Luthans (1998). Against this backdrop, in this paper it is assumed that the users' perception of competence when using the digital tools in the work environment will also affect his or her performance. Hence, it is posited:

*H2a: Expected competence positively influences expected performance at the digital workplace.*

At the same time, the need for competence, also often referred to as self-efficacy, not only has an impact on performance levels, but also on perceptions of enjoyment (Deci et al., 2017). For example, studies of competitive behaviors in the gaming context has argued that enjoyment can be achieved by increasing the users' perceived competence (Przybylski et al., 2014; Przybylski et al., 2009; Tauer and Harackiewicz, 1999). Likewise, studies in physical education have shown that perceptions of competence lead to an increased activity enjoyment (Cairney et al., 2016; McCarthy et al., 2008). Hence, it is

argued that when employees feel capable of mastering tasks on their own in a new digital working environment, it impacts their enjoyment. Therefore, it is hypothesized:

*H2b: Expected competence positively influences expected enjoyment at the digital workplace.*

### 2.2.3 Relatedness

The need for relatedness refers to an individual's urge to have a sense of connectedness with significant others, to belong to a group that shares the same values, and to maintain good social relations (Lee et al., 2015; Deci et al., 1991). Employee connectedness thereby entails all forms of communication or social exchange within the organization, whereas responsive leadership comprises all management initiatives aimed at maintaining and enhancing a fruitful work (Dery et al., 2017). Likewise, social connectedness in digital work environments has been shown to have a significant influence on an individual's performance (Kuegler et al., 2015). That is because, as employees become more socially connected, they exchange more information and knowledge amongst each other (Karoui et al., 2015). It is therefore proposed:

*H3a: Expected relatedness positively influences expected performance at the digital workplace.*

A sense of connectedness with others has also a positive effect on enjoyment. Positive emotions have shown to emerge from interpersonal relatedness. They increase an individual's well-being (Reis et al., 2000) and are positively related to happiness (Satıcı et al., 2016; Mogilner, 2010). Workers feel accomplished if they are confident and enabled to solve problems. Additionally, employees also derive enjoyment from the altruistic need of helping others (Wasko and Feraj, 2005; Wasko and Feraj, 2000). Based on these findings and referring to the context of digital workplace transformation, it is argued that he or she will exhibit heightened levels of enjoyment when using new technologies in his or her work environment that support employees feeling connected with peers and supervisors. Hence, it is proposed:

*H3b: Expected relatedness positively influences expected enjoyment at the digital workplace.*

## 2.3 Antecedents and mediating impact of positive attitude towards digital workplace transformation

Defined as a "psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (Eagly and Chaiken, 1993, p. 1), attitudes have been the object of a vast body of IS research, including the Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB), and corresponding theories. The belief that new technology increases a user's performance has been shown to be one of the most important antecedents of attitude towards acceptance and usage of such technology (e.g. Xu et al., 2013; Dabholkar and Bagozzi, 2002; Koufaris, 2002; Johnson et al., 1998; Eighmey, 1997; Jarvenpaa and Tood, 1997). In the case company of this paper, it is assumed that the performance expectancy regarding an array of new tools at the workplace has a significant influence on the users' attitude towards digital transformation of the workplace. Hence, it is hypothesized:

*H4: Expected performance at the digital workplace is positively correlated with the attitude towards digital transformation of the workplace.*

Particularly in private contexts, ranging from online shopping (Stafford and Stafford, 2001), music streaming (Chu and Lu, 2007) or participating in social networking (Tscherning and Mathiassen, 2010), enjoyment has been found to be an important determinant for adopting new technologies (Lowry et al., 2015). Compared to the plethora of studies in the personal context, surprisingly few studies exist that look at hedonic motivations in work environments. For example, a study of personal computer usage at work has shown that enjoyment has an influential role on attitudes (Davis et al., 1992). It is therefore expected that an employee's evaluation of digital tools as a means to higher levels of performance in the work environment has a significant impact on his or her attitude towards digital transformation of the workplace. Hence, it is posited:

*H5: Expected enjoyment at the digital workplace is positively correlated with the attitude towards digital transformation of the workplace.*

One aspect, why some IS implementation projects are successful while others fail, so the IS literature found, is the degree of user involvement in the implementation process (Kaschig et al., 2016; Shatat 2015; Lee and Lee 2004). Research has pointed at agility performance, which captures an employee's proactivity in "conducting activities that positively affect the changing environment" (Cai et al., 2018, p. 56) and is the outcome of a psychological state that favors change. Therefore a new construct is proposed, that of intentions to actively support the digital transformation and change process. It captures the willingness of an employee to play an active role in the transformational process by dedicating effort and time. However, so it is argued in this paper, employees' willingness to actively support the change process is only possible if favorable attitudes exist towards the change process and digital technologies in general. It is therefore proposed:

*H6: Positive attitude towards digital transformation of the workplace is positively correlated with intentions to actively support digital workplace transformation.*

The following figure summarizes the research model with nine hypotheses.

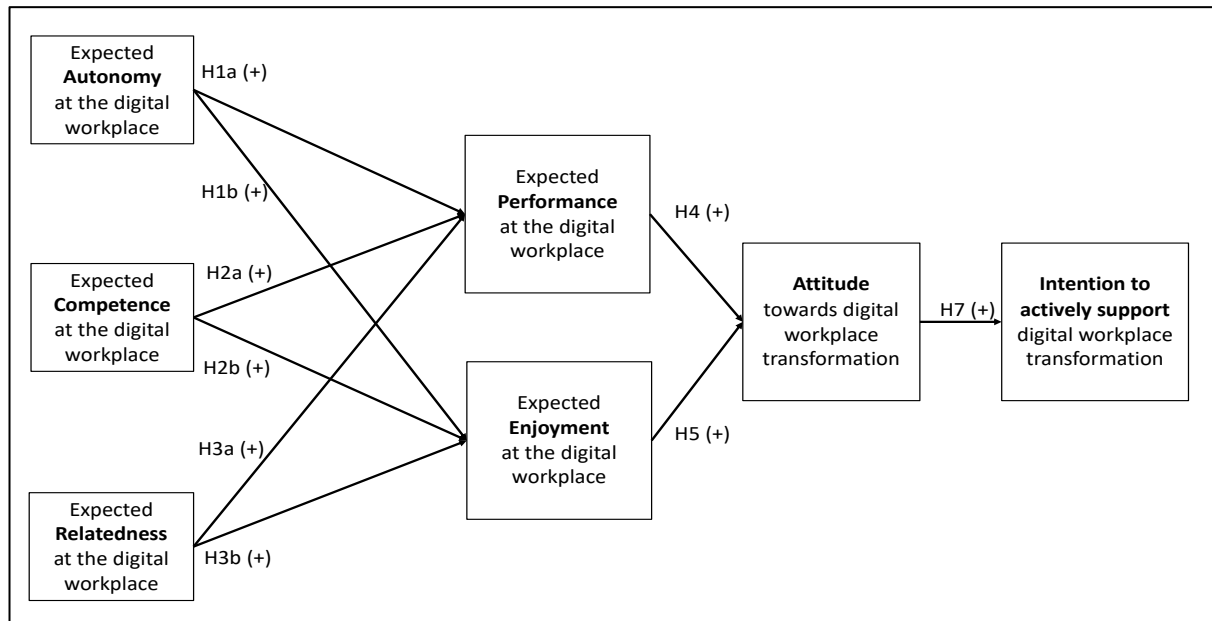


Figure 1. Research model

### 3 RESEARCH DESIGN

#### 3.1 Context information

In order to address the research question, a case-based survey was conducted. The case company used for the purpose of this study is a subsidiary of a global enterprise in the wholesale industry, employing over 150,000 employees. It is based in Germany and can be characterized as a small to medium sized company. In late 2017, and as part of a global initiative, the parent company, in an attempt to increase the company's effectiveness as well as employee engagement, evaluated the existing work environment. The evaluation included an analysis of the IT infrastructure as well as joint discussions with employees about their technological working environment. In its initial situation, the company offered their marketing services via pdf-catalogues and fax to other group businesses. Orders were taken in mainly via (physical) mail, fax and sometimes via e-mail. Also, service creation processes were conducted via rather outdated instruments. Based on the evaluation, management decided to digitally transform the business model by establishing a company-wide e-commerce online shop, followed by a plan for modernizing the workplace to digitalize and improve the overall service creation process. The digital transformation of the workplace in the case company was casted as a pilot project. Should the project turn out to be successful, the parent company's plans envisioned a company-wide roll-out.

The subsidiary, employing 226 employees, is responsible for business-to-business and business-to-consumer advertising, serving other subsidiaries as well as the parent company. Services included, for example, running targeted marketing campaigns to promote the parent company's product portfolio. Technologies at the workplace had not changed significantly over the last two decades. Most employees used desktop computers running Windows XP and older, along with Microsoft Office for documenting and calculation tasks. E-mail was considered a rather sophisticated means of digital communication. Many texts and memos were still exchanged in a paper-based manner. At some offices, typewriters from the 1980s were still in use. The workplace transformation project envisioned a situation in which all tasks as well as communication and collaboration efforts between employees would be technically integrated. Apart from e-mail, a vast array of technologies was planned to take effect: enhanced communication abilities, including video conferencing features, through Skype for Business; enterprise social network tools (such as IBM Connections, Jive, or Yammer), allowing to connect and form relationships with colleagues; a project management software tool, allowing project members to simultaneously work on tasks and to provide a transparent overview of the project's progress; as well as collaborative text editing tools (such as Microsoft OneDrive or Google Drive), allowing individuals to share and jointly modify files. Desktop computers were to be substituted with new laptops, allowing for more flexible work models, including home office work, and meetings were planned to be held virtually in the future via video conferencing tools. Management's plan regarding the modernization of the workplace was disseminated not only via e-mail and paper-based memos but also meetings and joint workshops. Before the start of the digital workplace transformation project, a quantitative survey amongst employees is conducted.

### **3.2 Measurement of variables**

A quantitative survey was conducted between September 4th and September 22nd, 2018 to capture the users' beliefs and attitude towards the digital transformation of the workplace. Participation in the study was optional. The survey was prefaced again with a summary of the above-described plan to digitally modernize the business model and consequently the workplace, along with a description of the term of the digitally transformed workplace. All constructs used validated scales from prior research, except for an individual's intention to actively support the digital workplace transformation. Modeled as a reflective construct, measurement items are developed following the guidelines by Straub (1989). For that, first an initial item pool for the construct was established, then successively reducing the number of items by conducting three half-day workshops (Cronbach, 1971) with up to four researchers. During these workshops, participants were asked to rate the level of fit of each item for the construct under question. Equipped with a set of items, another half-day workshop in the case company with ten employees from the entry-, mid- and senior management level was conducted, soliciting feedback from individuals familiar with the conceptual understanding of the construct. The feedback showed that the discussed set of items provide a good fit.

Antecedents comprise variables of autonomy, competence and relatedness, which were measured based on the works by Deci et al. (2001) and Spreitzer (1995). While autonomy captures the degree to which an individual expects being able to engage with all tools of the digitally transformed workplace in a self-determined way, competence captures the degree to which an individual expects to have confidence in his or her abilities to effectively master activities in his or her digital work environment. Relatedness, on the other hand, captures the degree to which the digitally transformed workplace is expected to lead to a sense of connectedness with other colleagues in the organization. Other variables included measures of performance, enjoyment, attitudes towards digital transformation and usage intentions. Performance expectancy, capturing the degree to which an individual expects the digital work environment being supportive for his or her productivity and efficiency, was measured as proposed by Venkatesh et al. (2003). Enjoyment, capturing the degree to which an individual expects engaging with the digital work environment as being enjoyable and fun, was measured as proposed by Agarwal and Karahanna (2000). Attitude towards the digital transformation of the workplace, capturing an individual's tendency to evaluate the transformation with some degree of favor, was measured as proposed by Venkatesh et al. (2003). Each of the constructs used a five-point Likert scale, ranging from "strongly disagree" (1) to "strongly agree" (5). Measurement items are displayed in Table 1.



Construct		Source
<b>Autonomy (AU)</b>		
AU1	I feel like I could decide to which extent I would like to use the digitally transformed workplace.	adapted from Deci et al. (2001) and Spreitzer (1995)
AU2	I feel like I can pretty much be myself when working at the digitally transformed workplace.	
AU3	There are many opportunities for me to decide for myself how I use the digitally transformed workplace.	
<b>Competence (CO)</b>		
CO1	I would not feel very competent when I was using the digitally transformed workplace. (reverse coded)	adapted from Deci et al. (2001) and Spreitzer (1995)
CO2	At the digitally transformed workplace, I would get many chances to show my capabilities.	
CO3	When working with at digitally transformed workplace, I would often feel very capable.	
<b>Relatedness (RE)</b>		
RE1	People in the digital work environment would be pretty friendly towards me.	adapted from Deci et al. (2001) and Spreitzer (1995)
RE2	I would really like the people I would be working with in the digital work environment.	
RE3	I would get along with the people in my digital work environment.	
<b>Performance (PE)</b>		
PE1	I would find the digitally transformed workplace useful in my job.	adapted from Venkatesh et al. (2003)
PE2	Using the digitally transformed workplace would help me to achieve goals that are important to me.	
PE3	Using the digitally transformed workplace would enable me to accomplish tasks more quickly.	
PE4	Using the digitally transformed workplace would increase my productivity.	
<b>Enjoyment (EN)</b>		
EN1	I would have fun using the digitally transformed workplace.	adapted from Agarwal and Karahanna (2000)
EN2	Using the digitally transformed workplace would provide me with a lot of enjoyment.	
EN3	I would enjoy using the digitally transformed workplace.	
EN4	Using the digitally transformed workplace would bore me. (reverse coded).	
<b>Attitude towards digital transformation (AT)</b>		
AT1	To digitally transform the workplace is a good idea.	adapted from Venkatesh et al. (2003)
AT2	I would like it, to work in a digitally transformed work environment	
AT3	A digitally transformed workplace would make my work more interesting.	
<b>Intention to actively support digital workplace transformation (SU)</b>		
SU1	I intend to actively support the change process towards a digitally transformed workplace.	self-developed
SU2	I plan to accompany the change process towards a digitally transformed workplace.	
SU3	I intend to actively participate in the change process towards a digitally transformed workplace.	
SU4	I plan to constructively participate in the change process towards a digitally transformed workplace.	
SU5	I intend to provide active feedback regarding the change process towards a digitally transformed workplace.	

Table 1. Measurement items

## 4 Results

### 4.1 Descriptive statistics and measurement model analysis

Overall, 149 of the 226 employees participated in the survey (66%). The ratio of females to males was mostly balanced with 46% females and 54% males. About 47% of participants were younger than 40 years, and 53% were 41 years or older. The majority of participants have been with the company for more than six years (58%), about a third (or 27%) have been working for the company between 1 to 5 years, and about 15% have only recently joined. Out of all employees, 23% were assigned staff responsibilities. Table 2 provides a detailed summary of the demographic data.

<b>Gender</b>	<b>N</b>	<b>%</b>
Male	80	54
Female	69	46
<b>Age</b>		
<21	5	3
21-30	29	19
31-40	36	24
41-50	43	29
51-60	30	20
> 60	6	4
<b>Period of employment in years</b>	<b>N</b>	<b>%</b>
<1	23	15
1-3	28	19
4-6	12	8
6-10	16	11
>10	70	47
<b>Role</b>		
Staff responsibilities	35	23
No staff responsibilities	114	77

Table 2. Demographic data

Partial least squares structural equation modeling (PLS-SEM) was applied, using SmartPLS 3.2.7 (Ringle et al. 2015). All constructs were modeled as reflective measures of their respective indicators. To evaluate the statistical validity of the constructs, the following three criteria to assess convergent validity were applied (Fornell and Larcker, 1981). First, the average variance extracted (AVE) was calculated for each construct; all exceeded the recommended level of .50 (see Table 3). Second, the composite reliability (CR) of each construct was calculated; all exceeded the recommended level of .70. Third, it was checked if items loaded higher than .70 on their respective construct. All item loadings, except for CO1 loaded higher (.04). This item is also the reason, why the calculation of Cronbach's Alpha for all constructs exceeded the recommended level of .70 except for Competence. However, the item CO1 was

not extracted for two reasons: First, the scale is based on a validated stream of studies, and second, the AVE for the overall construct is still above .50 (Fornell and Larcker, 1981). In order to assess discriminant validity, it was confirmed that the square root of the AVE for each construct is greater than its correlations, as recommended by Fornell and Larcker (1981). In addition, their respective loadings were found to be higher than their cross-loadings (Gefen and Straub, 2005).

Multicollinearity was not an issue as the variance inflation factors (VIF) ranged between 1.00 and 2.52 and were hence lower than the suggested maximum value of 5.00 (Menard, 1995).

	Mean	SD	AVE	CR	CA	AU	CO	RE	EP	EN	AT	SU
<b>AU</b>	2.96	1.04	.75	.90	.79	<b>.84</b>						
<b>CO</b>	3.19	.88	.71	.88	.44	.64	<b>.77</b>					
<b>RE</b>	2.85	.91	.59	.75	.84	.50	.53	<b>.87</b>				
<b>PE</b>	3.74	.99	.78	.94	.91	.64	.61	.55	<b>.89</b>			
<b>EN</b>	3.42	1.08	.82	.95	.92	.63	.61	.54	.78	<b>.91</b>		
<b>AT</b>	3.68	1.17	.87	.95	.92	.63	.60	.53	.81	.80	<b>.93</b>	
<b>SU</b>	3.98	1.04	.86	.97	.96	.55	.41	.38	.69	.66	.57	<b>.93</b>

SD = Standard Deviation, AVE = Average Variance Extracted, CR = Composite Reliability, CA = Cronbach's Alpha, AU = Autonomy, RE = Relatedness, CO = Competence, PE = Performance, EN = Enjoyment, AT = Attitude towards Digital Workplace Transformation, SU = Intention to Actively Support the Digital Workplace Transformation

Table 3. Measurement model analysis and inter-construct correlations

## 4.2 Structural model analysis

Bootstrapping (two-tailed) was employed with 5,000 samples to obtain the path coefficients, measures of significances, and determination coefficients. Autonomy shows significant and positive effects on performance ( $\beta=.36$ ;  $p<.001$ ) and enjoyment ( $\beta=.34$ ;  $p<.001$ ), supporting hypotheses 1a and 1b. Similarly, competence shows significant and positive effects on performance ( $\beta=.26$ ;  $p<.001$ ) and enjoyment ( $\beta=.28$ ;  $p<.01$ ), supporting hypotheses 2a and 2b. And likewise, relatedness shows significant and positive effects on both performance ( $\beta=.24$ ;  $p<.001$ ) and enjoyment ( $\beta=.22$ ;  $p<.01$ ), supporting hypotheses 3a and 3b.

Autonomy, relatedness and competence account for 52% of the variance of performance expectancy and for 51% of the variance of enjoyment. Explaining 73% of the variance, performance ( $\beta=.46$ ;  $p<.001$ ) and enjoyment ( $\beta=.45$ ;  $p<.001$ ) show significant and positive effects on attitude towards digital transformation of the workplace, supporting hypotheses 4 and 5. Finally, accounting for 45% of the variance, attitude ( $\beta=.67$ ;  $p<.001$ ) also has a significant and positive effect on the intention to actively support digital workplace transformation, supporting hypotheses 6.

In sum, all nine hypotheses were supported. An overview of the estimated structural model is displayed in the following Figure 2.

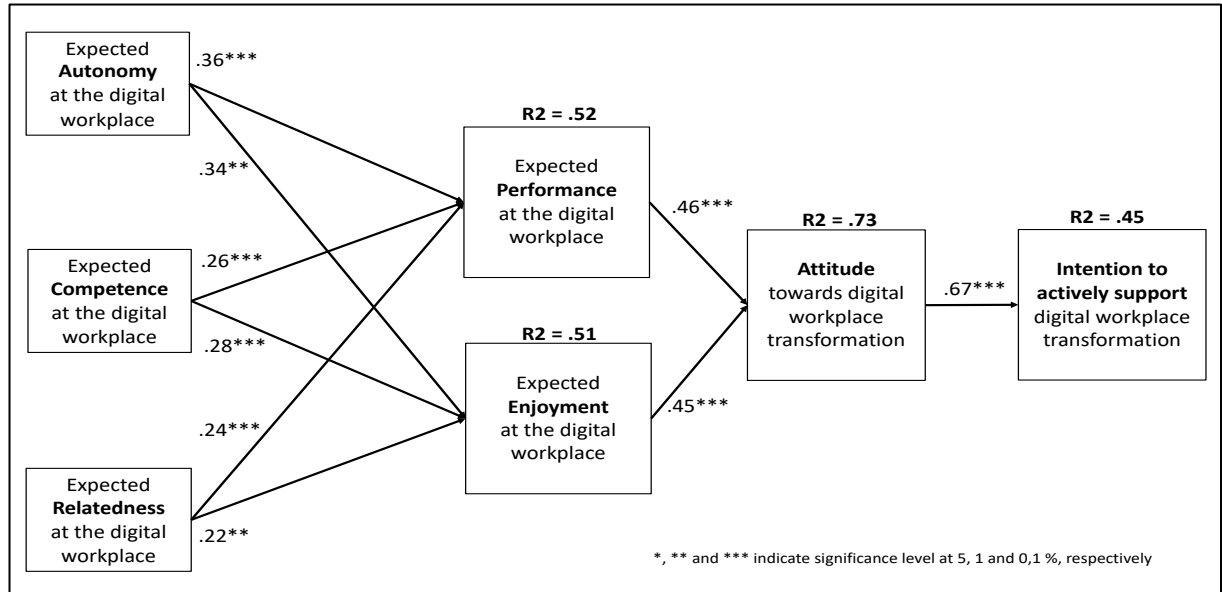


Figure 2. Research model results

Overall, autonomy had the highest effects on both performance and enjoyment, followed by competence and relatedness. Performance and enjoyment had almost equal effects on the attitude towards digital transformation, which has a high effect on the intention to support the transformation and corresponding change.

In addition, to assess the statistical power of the data, the effect size was analyzed by calculating Cohen's  $f^2$ . Cohen (1988) suggests the following criteria for interpreting effect size: (1)  $.02 < f^2 \leq .15$  for small effect sizes; (2)  $.15 < f^2 \leq .35$  for medium effect sizes; and (3)  $f^2 > .35$  for large effect sizes. Regarding the contribution to the variance of performance expectancy, a medium effect size was found for autonomy (0.15), followed by small effect sizes of competence (.08) and relatedness (0.08). With regards to the variance explained of enjoyment, autonomy has a small effect (.13), and compared to competence (.08) and relatedness (.07) the highest statistical power. Regarding the contribution to the variance explained of attitude towards digital transformation, medium statistical power was found for performance expectancy as well as enjoyment (both .30). Attitude towards digital transformation showed a high statistical effect (.82), contributing to the variance explained of intention to support digital workplace transformation. Moreover, the predictive relevance of the model was analyzed by applying a Stone-Geisser test ( $Q^2$ ) to assess how well the data can be reproduced by the PLS model. The  $Q^2$  values for performance (.38), enjoyment (.39), attitude (.59), intention to support digital transformation (.35) and usage intention (.49) were positive, indicating significant predictive relevance (Fornell and Bookstein, 1982).

## 5 Discussion

### 5.1 Proposition 1: Autonomy equals technological decision-making

This idea of autonomy fits neatly with other studies that have looked at the relative advantage of one technology over another (Choudhury and Karahanna, 2008; Moore and Benbasat, 1991). Having an array of tools available prompts employees to act autonomously. It will prompt them to choose between existing technologies and new ones once the implementation is underway (e.g., using instant messaging instead of traditional email); it might also prompt them to choose amongst tools within the new set of technologies (e.g., using instant messaging or Skype to get in touch with a colleague). Traditional research on IS use in the workplace has been guided by the assumption that IT departments sanction and mandate the tools to be used by employees (Brown et al., 2002). The data shows that autonomy in decision-making is a strong predictor for perceptions of usefulness and enjoyment. Acting on one's own, and deciding how to go about work in general and work task in particular is a vital component for

employees to embrace the digital workplace. Likewise, for management it is equally important to leave enough freedom and room for employees to make decisions about their own work processes. Only when employees experience a sense of autonomy can those expectations be met.

## **5.2 Proposition 2: Competence equals technological prowess**

The study indicates that the technological confidence that employees display is a strong predictor of perceptions of usefulness and enjoyment and determines their attitudes towards the digital workplace. Competence, sometimes referred to as self-efficacy, has been found to be related to an individual's personal accomplishment (Fernet et al., 2013) and performance (Locke, 1991). It has also been found to be associated with effort and persistence (Bandura, 1977), as well as proactive behaviors and behaviors of experimentation (Kirkman and Rosen, 1999; Spreitzer, 1995; Thomas and Velthouse, 1990). Individuals that feel competent in using technologies of the digital workplace might therefore not only use the technology but explore technology in novel ways. In fact, in recent years, the research focus has moved from the study of "use" to the study of "effective use" (Burton-Jones and Grange, 2008). Building confidence, either through group training sessions during implementation or targeted coaching after the fact, could therefore be a way of getting individuals to use digital workplace technologies most effectively. For management this means to meticulously plan and execute digital workplace strategies to exploit the new technologies for better outcomes.

## **5.3 Proposition 3: Relatedness equals technology-facilitated social belonging**

The study also indicates that technologies of the digital workplace have to provide levels of relatedness, or a sense of connectedness, in order to prompt a positive attitude among employees. Feeling connected with and to others is of vital importance for future workplaces. This notion of relatedness also fits in with studies that have looked at technology sociability, or the "degree to which an individual's desire to socialize is satisfied through a system that is able to provide social interactions with others" (Junglas et al., 2013). It also fits in with attachment motivation theory (Li et al., 2005; Baumeister and Leary, 1995), which asserts that attachment to others is critical for an individual's well-being. Outside of the workplace, the human's urge to be part of a group, to interact and communicate is being met by an abundance of technologies. Social media applications have achieved a high user basis, with e.g. more than 2.2 billion active users on Facebook in 2017 (Statista 2018). Inside the workplace, employees' desire to connect with others can be met by similar platforms that allow for collaborations between individuals and across workgroups, using, for example, instant messaging, enterprise social networks such as Yammer, or even wikis (Schneider and Meske, 2017; Riemer et al., 2015; Stieglitz et al., 2014). For management it is important to note that simply providing task-related functionality when introducing a digital workplace environment is insufficient: equally important is the addition of functionalities that support relatedness as it boosts the desire of employees to use these new technologies.

## **5.4 Proposition 4: Personal experiences blur experiences with enterprise technology**

This overly positive disposition towards a digital workplace can only be partially explained by the existing workplace toolset, or the lack thereof. Employees are mostly equipped with desktops, not laptops; phones are desk phones, not mobile phones. Apart from calling, email is the standard way of communicating, and the majority of meetings are held in person. However, the workplace technologies in use are, by no means, ill-fitting for the work tasks at hand (Goodhue and Thompson, 1995), nor are they misaligned with the company's overall business objectives (Henderson and Venkatraman, 1993). IT spending in the retail/wholesale industry is chronically low (at around 1.4%)—and investments into workplace digitization are even lower (Gartner, 2012). Rather, the IT consumerization trend, sometimes also termed as BYOD, might have contributed to the level of expectation that employees place on these new workplace technologies (Köffer et al., 2014; Harris et al., 2012). Experiences made in the personal realm

might have transpired into the professional realm. Seeing what is possible outside the workplace might have laid the foundation for employees to form a level of competence about their ability to use the new technology. Experiencing technologies outside the organization may also have contributed to employees' level of autonomy and their willingness to make their own work decisions when faced with new technology. It may also have contributed to an understanding that new technologies, particularly that of social networks, can facilitate relationships with others in the workplace.

### 5.5 Proposition 5: Management can activate employees to support and shape the success of digital workplace transformation

Given that prior literature points toward less favorable attitudes towards organizational changes in general (Ford et al., 2008; Piderit, 2000; Dent and Goldbert, 1999) the level of participatory involvement that individuals were seeking was somewhat surprising. This empirical study has shown that employees' intentions to actively support the change process were acutely high. The average value was 3.98/5.00, indicating that employees not only wanted to actively support and participate in the transformational process, but also to be an active member in constructing the new environment and providing feedback. Since extant studies have also demonstrated the importance of user involvement as part of a successful implementation process (Shatat, 2015; Lee and Lee, 2004), considering users' intentions to actively support a technology seems only appropriate. Intentions to actively support not only capture a variable that management can measure, but one that it is able to influence. For example, organizations might want to consider providing outlets for suggestions early on and, if employees are willing, an easy way to formalize their participation in the design and implementation process. Likewise, future research might want to consider studying the notion of intentions to actively support in more detail and shift its perspective from one that is solely IS focused and uses usage intentions as its measure of success to one that is encompassing of the participatory nature of the human being and alludes to the underlying drivers of human motivation.

## 6 CONCLUSION

This study shows that to increase users' positive attitude towards transformational projects, and consequently the willing to actively support corresponding changes, digital workplace transformation should not just be about technology — it is about enabling a workforce to feel competent, autonomous and connected with others. This paper contributes first by introducing the term *digital workplace transformation* and hence a micro perspective to the stream of digital transformation research. Second, the paper contributes to theory by proving the relevance of self-determination for employees' performance and well-being in knowledge-centric work environments. Third, a new construct to capture users' intention to engage in IT-induced change processes was established and successfully tested.

As every study, this study also has limitations. In order to achieve high reliability and to exclude confounding variables introduced by the homogeneity of organizational contexts, it was focused on one company only. In that sense, internal consistency was bought at the expense of generalizability. Also, this study solely used intentions as its dependent variable. While the shortcomings associated with this choice are acknowledged (Polites et al., 2018), it was inevitable. The actual implementation of the digital workplace will take place in 2020, a follow-up study is planned.

Further research should add to the micro perspective of digital transformation to uncover the manifold influences of business model transformations on digital workplace environments and corresponding routines. Scientists could test this research model in other companies from different country cultures, branches and levels of organizational digitalization. Also, future research could benefit from testing further variables that may influence the users' intention to actively support IT-induced change and therefore the success of corresponding transformation projects. In addition, future research could investigate if specific technologies drive the perception of performance and enjoyment more than others. Also, the downsides of digital workplace transformation need to be considered in further studies, for instance in relation to increasing technostress.

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